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Figure 1 Map of San Joaquin Valley Project Area and Vicinity

Figure 2 San Joaquin River Basin Refuges

Figure 3 Tulare Lake Basin Refuges

Appendix A Wildlife Refuges Supported by the CVPIA WAP

Appendix B Other Past, Present, and Reasonably Foreseeable Future Water Acquisitions in the San Joaquin Valley to Implement CVPIA

Appendix C Operations Forecasts

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1. Introduction

1.0 INTRODUCTION

The U.S. Department of the Interior (Interior), through the Bureau of Reclamation (Reclamation) and the U.S. Fish and Wildlife Service (FWS), proposes to purchase temporary water supplies from Merced Irrigation District (Merced ID) during the water supply year, 2000 to 2001, to be provided to San Joaquin Valley wildlife refuges. Refer to Figure 1 for a map of the San Joaquin River and its tributaries. The wildlife refuges that may receive the acquired water are: Grasslands Resource Conservation District, Kern National Wildlife Refuge (NWR), San Luis NWR (West Bear Creek Unit), Los Banos Wildlife Area (WA), and North Grasslands WA (Salt Slough Unit) (Figures 2 and 3, and Appendix A). This water will be used to enhance and maintain critical wetland habitats at the designated refuges. Acquisition of this water is mandated by Section 3406(d)(2) of the Central Valley Project Improvement Act¹ (CVPIA).

Section 3406(d)(1) of the CVPIA requires the Secretary of the Interior, immediately upon enactment, to provide firm delivery of Level 2 and 2/3 Full Habitat Development water supplies to the various wetland habitat areas identified in Reclamation's *Report on Refuge Water Supply Investigations* (Reclamation, 1989) and the *San Joaquin Basin Action Plan/Kesterson Mitigation Plan* (Interior et al, 1989). These reports describe water needs and delivery requirements for each wetland habitat area, to accomplish the stated refuge management objectives. In the Reclamation report (1989), the average annual historical supplies were termed "Level 2", and the supplies needed for optimum habitat management were termed "Level 4". In the Interior report (1989), the term "Full Habitat Development" was introduced. The meaning of this term is similar to "Level 4" and will herein be referred to as "Level 4". The meaning of the term "2/3 Full Habitat Development" is similar to the term "Level 2" and will herein be referred to as "Level 2".

Section 3406(d)(2) of the CVPIA further directs the Secretary to provide additional water supplies to meet Level 4 requirements by 2002 through the acquisition of water from willing sellers. CVPIA requires that 80 percent of the full Level 4 water requirements be provided in 2000/2001. The proposed acquisition represents a portion of the required incremental increase for the designated refuges to meet Level 4 requirements.

Reclamation, as the lead Federal agency, has prepared this Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA), as amended. The overall general impacts of

¹The Central Valley Project Improvement Act (CVPIA) was signed into law on October 30, 1992, as Title XXXIV of Public Law 102-575. The CVPIA mandated changes in Central Valley Project (CVP) management particularly to protect, restore, and enhance fish and wildlife. The CVPIA includes some 103 programs and activities, and requires close coordination among the implementation teams assigned to the various programs.

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implementing the CVPIA, including providing Level 4 water supplies is addressed in a Final Programmatic Environmental Impact Statement (PEIS) (Interior, 1999). A Record of Decision is expected for the PEIS in the fall of 2000. Because the Final PEIS is a programmatic document, it presents a system-wide analysis rather than a detailed analysis of Level 4 water deliveries. Also, a draft Environmental Assessment/Initial Study (EA/IS) was prepared for the conveyance of water to the refuges in the San Joaquin Valley (Interior et al, 1997); and two EAs were prepared for the refuge water supplies - one for the San Joaquin Basin (FWS, 2000) and the other for the Tulare Lake Basin (CH2MHill, 2000). These three documents will be finalized when the Record of Decision is enacted for the PEIS. Previous water acquisitions from Merced ID for wildlife benefits occurred in 1996 and 1997; two supplemental EAs were prepared for these acquisitions. The cited documents follow:

1. *Final Supplemental Environmental Assessment and Finding of No Significant Impact for the Temporary Water Purchase from the Merced Irrigation District, Interim Water Acquisition Program* (Reclamation, 1996); this document includes analysis of environmental impacts resulting from the purchase of up to 20,000 acre-feet (af) of available water from Merced ID's available storage for in-stream flows in October 1996, and the purchase of up to 100,000 af of available water from storage for in-stream flows, Sacramento - San Joaquin River Delta (Delta) flows, and wildlife refuges in the spring and fall of 1997.

2. *Supplemental Environmental Assessment and Finding of No Significant Impact for the San Joaquin River Tributary Component of the Interim Water Acquisition Program* (Reclamation, 1997); this document includes analysis of environmental impacts resulting from the purchase of up to 47,500 af of available water from Merced ID's available storage for in-stream flows and to meet flow objectives at Vernalis during the spring and fall of 1997.

1.1 PURPOSE AND NEED

There is a need to purchase water during the 2000/2001 water year from willing sellers to meet Level 4 requirements at San Joaquin wildlife refuges. Pursuant to Section 3406 (d)(2) of the CVPIA, the Department of Interior (Interior) is to provide 80 percent of Level 4 increment water supplies to San Joaquin wildlife refuges in the 2000/2001 water supply year. To meet CVPIA requirements, a firm water supply will need to be purchased from willing sellers. The Proposed Action to is purchase up to 25,000 af from Merced ID.

The purpose of the water purchase is to enhance and maintain wetland habitats for the benefit of migratory waterfowl, and wetland-dependent wildlife in the San Joaquin Valley. Level 4 water is needed to optimally manage Central Valley wetland habitat refuges as identified in the *Report on Refuge Water Supply Investigations* (Reclamation, 1989). The notable difference between obtaining water supplies for optimum management (Level 4) and average annual deliveries (Level 2) is that Level

1. Introduction

4 water supplies allows for the management of habitat diversity. Habitat management includes timing and duration of fall and late winter flooding, summer water for food production, and permanent wetland habitat maintenance.

As described in the *Report on Refuge Water Supply Investigations* (Reclamation, 1989), total available acres of wetlands within the Central Valley of California have declined from about 4 million acres in 1850, to about 300,000 acres in the 1980's. Federal National Wildlife Refuges and State Wildlife Management Areas comprise approximately one third of this acreage. The refuges in the Central Valley are a critical component of a major bird migration route known as the Pacific Flyway. Maintenance of the Pacific Flyway for waterfowl depends on maintaining critical wintering habitats in the Central Valley. Waterfowl migration to the Central Valley begins in August with the arrival of the first birds from the north. The numbers of wintering waterfowl rapidly increase over the late summer and fall and by late December as many as 10-12 million waterfowl will have migrated to or through the Central Valley for their winter sojourn. In addition to providing critical bird habitats, the wetlands also provide groundwater recharge, recreation and educational opportunities, flood and erosion control, and habitat for several State and Federal-listed threatened and endangered species.

A secondary beneficial use of the purchased water is to provide enhanced in-stream flows in the Merced and Lower San Joaquin Rivers during the fall that will benefit fall-run chinook salmon. These flows will enhance Merced and Lower San Joaquin River flows over and above those already planned which benefit attraction and spawning flows for Chinook salmon.

2. Alternatives

2.0 ALTERNATIVES

The Proposed Action meets the identified need and purpose. A No-Action Alternative has been analyzed to address impacts associated with not meeting the identified need with water from Merced ID. An additional alternative that was also considered but not evaluated further, is included in this section.

Additionally, Interior has also pursued other viable purchases from willing sellers that could provide Level 4 water supplies to the San Joaquin Valley wildlife refuges. Other purchases pursued this year to meet incremental Level 4 refuge needs are provided in Appendix B. Although these purchases will meet the same purpose and need as the Proposed Action, they are not considered alternatives to the Proposed Action since there still is an unmet need for incremental Level 4 water supplies even with acquisition of other potential water sources. Thus the Proposed Action is needed to obtain additional Level 4 water supplies beyond that already identified as potentially available from willing sellers.

2.1 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, water deliveries to the San Joaquin wildlife refuges would consist of existing firm supplies that satisfy Level 2 requirements and any water acquired from other sources to meet the Level 4 incremental quantities. Management objectives for San Joaquin wildlife refuges and wildlife management areas associated with full Level 4 increment water supplies would not be met during the 2000/2001 water year under the No-Action alternative. Currently there is an unmet need of 22,400 af (this quantity does not include conveyance losses) to provide the incremental Level 4 supplies to the San Joaquin wildlife refuges. Absent this water purchase, water available for acquisition from Merced ID in the fall of 2000 would either remain in storage within Lake McClure for future marketing to other buyers or use by Merced ID.

2.2 ALTERNATIVE 1

Merced ID is to supply 12,500 af of water for instream flows on the Merced and Lower San Joaquin Rivers during the fall as part of the San Joaquin River Agreement (SJRA). The Vernalis Adaptive Management Plan (VAMP) is implemented under the SJRA and provides environmental benefits in the lower San Joaquin River and Delta. The VAMP implements protective measures for fall-run salmon and provides environmental benefits in the lower San Joaquin River and Delta during the key April/May period as well as attraction flows in October. Alternative 1 would be to use the 12,500 af of water for the wildlife refuges in addition to its use for the fall attraction flows. Additional water would also be acquired to supplement this water to meet the Level 4 needs of the refuges south of the Delta.

This alternative was not considered further in this EA because of the time constraints involved in

2. Alternatives

acquiring the water from Merced ID and consequently being able to convey it through the Delta to the San Joaquin wildlife refuges when there is pumping capacity available in the Delta. Also, the time involved in petitioning the State Water Resource Control Board (SWRCB) for a change in the water rights from Vernalis through the Delta and to the south to the wildlife refuges via Section 1707 of the California Water Code would exceed the amount of time available to meet the Delta export pumping window.

2.3 ALTERNATIVE 2, PROPOSED ACTION

The proposed action is for the Interior to purchase up to 25,000 af of water from Merced ID during the period of October through December, 2000 to meet incremental Level 4 water supply requirements for the 2000/2001 water year, as required by the CVPIA. This water is in surplus of Merced ID's current water year needs and will be provided from storage at Lake McClure behind Exchequer Dam with the point of divergence being downstream at the Crocker-Huffman Dam (a diversion dam) on the Merced River. The source of Merced ID's water supply comes from water available under an appropriate water right (License #11395, issued by the SWRCB). Merced ID will enter into a refill obligation agreement with Reclamation to ensure that the scheduling of the refill of Lake McClure after the proposed transfer will not adversely affect the State Water Project (SWP) or Central Valley Project (CVP).

Merced ID intends to make the water available for the proposed transfer by increasing the releases above that which would have been made without the transfer by the quantity requested by Interior, up to 25,000 af. Operation forecasts have been run to demonstrate the increased releases under 50 percent and 90 percent exceedence level inflows (the percent probability that the conditions will be wetter than the forecast used) for water year 2001. Under a 50 percent exceedence level inflow, storage would refill by January 31, 2001, such that no reduction in water deliveries would be necessary. Under a 90 percent exceedence inflow, storage would be 25,000 af less. In the extreme case of consecutive critical water years, Merced ID may pump up to an additional 25,000 af of groundwater to make up for this shortfall. Appendix C provides a summary of the forecasted operations based on 90 percent exceedence level inflows.

Merced ID has petitioned the SWRCB for a temporary change in their licensed water right under Water Code section 1725 et seq. (SWRCB petition dated August 18, 2000). The petition requests that the place of use be expanded to include the wildlife refuges within the service area of the CVP and SWP. Merced ID has also requested that the proposed place of use to be changed to include the Merced River, the San Joaquin River to Vernalis, and the Delta for the purpose of preservation and enhancement of fish and wildlife resources in accordance with Water Code Section 1707. The proposed transfer would temporarily add the Banks Pumping Plant as a point of redirection for License 11395. If approved, the temporary change would be effective for a period not to exceed one year.

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Preliminary operations forecasts provided by Merced ID (Appendix C) show that the water could be provided from storage in Lake McClure; 16,000 af in October and 9,000 af in November. This schedule could be modified, depending on flow considerations, but the total transfer by Merced ID will not exceed 25,000 af. Note also that the 25,000 af volume does include expected conveyance losses of at least 10 percent. The flow release schedule of the purchased water is dependent on the specific amount of water available from Merced ID and the hydrologic conditions at the time of the releases. The releases will be developed in coordination with the California Department of Fish and Game (DFG), National Marine Fisheries Service (NMFS), FWS, Merced ID, CALFED, SWP Operations, and CVP Operations through a coordination process that takes place annually for fall flows on the San Joaquin River and its tributaries. At a preliminary coordination meeting held in Sacramento on August 8, 2000, it was determined that in order to coincide with the most likely opportunity for SWP pumping capacity in the Delta, the transfer should occur mid-October through November. Because of operation forecast uncertainties, the transfer could either be terminated early, or it could extend into the month of December if SWP pumping capacity in the Delta changes during this time period.

The accompanying operations forecasts provided in Appendix C portray separately the operations on the Merced River and the operations on the CVP and SWP, with and without the proposed 25,000 acre foot water purchase this Fall. The CVP/SWP operations forecast is a preliminary version (90% exceedence) of the August 2000, 12-month forecast of operations, including actions taken to meet Section 3406(b)(2) of the CVPIA. The "With Purchase" forecasts show, during the period of the transfer, an increase of 25,000 af in Merced River flow, San Joaquin River flow, SWP Delta export, and a corresponding 25,000 af decrease in Merced's storage in Lake McClure.

To the extent that purchased water is available for export, once the water is conveyed to the Delta, it will be wheeled by DWR thru SWP pumping facilities (Banks Pumping Plant) into the California Aqueduct and conveyed to O'Neill Forebay. Reclamation has applied for a wheeling agreement for this water purchase from the State Water Project Analysis Office of the California Department of Water Resources (DWR). From O'Neill Forebay, the water would be either conveyed into the Delta Mendota Canal or conveyed via the California Aqueduct, south for delivery to the various wildlife refuges in the San Joaquin Valley. Conveyance to the refuge boundaries will be accomplished using water district conveyance facilities. CVP pumping facilities will not be used in the Delta because excess capacity is not available during the fall months for pumping at the time of the Proposed Action.

The acquired water to be exported from the Delta will be pumped and conveyed through excess SWP capacity, in compliance with all existing environmental laws, regulations and agreements. These include:

2. Alternatives

- The 1994 Bay-Delta Accord (Principles for Agreement on Bay-Delta Standards) contains water quality standards for the Bay-Delta estuary and coordination of the operations of the SWP and CVP to meet these standards and address Endangered Species Act (ESA) biological opinion requirements.
- The SWRCB 1995 Water Quality Control Plan (WQCP) for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (SWRCB, 1995) incorporates several elements of U.S. Environmental Protection Agency (EPA), NMFS, and FWS regulatory objectives for salinity and endangered species protection.
- The biological opinions for Delta smelt (FWS, 1995) and winter-run chinook salmon (NMFS, 1993; as modified to conform with the Bay Delta-Accord Principles of Agreement).
- CALFED Bay Delta Program (CALFED, 2000) consists of a long-term comprehensive plan, including a water quality program, to restore ecosystem health and improve water management for beneficial uses of the Bay Delta system. This program, presented at a programmatic level of detail, was approved in August 2000. The specific implementing actions to be taken as part of CALFED will be evaluated as part of an implementing phase to begin in 2000/2001.
- Revised Water Right Decision 1641 (SWRCB, 2000) recognizes the San Joaquin River Agreement implementing the Vernalis Adaptive Management Plan (VAMP), and provides environmental benefits in the lower San Joaquin River and Delta at a level equivalent to the San Joaquin portion of the 1995 WQCP for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (SWRCB, 1995). The VAMP implements protective measures for fall-run salmon and provides environmental benefits in the lower San Joaquin River and Delta during the key April/May period.
- Reclamation has applied for a wheeling agreement for this water purchase from the State Water Project Analysis Office of the DWR for the use of SWP facilities in the conveyance of the proposed water transfer.

Therefore, the transferred water when exported is subject to all attendant environmental limitations and requirements for exporting water from the Delta. The impacts on the Delta of the SWP making full use (within prescribed constraints) of its pumping capacities and any necessary mitigation have already been fully documented in prior environmental documents (DWR, 1986; NMFS, 1993; FWS, 1995; and SWRCB, 1997).

3. Affected Environment and Environmental Consequences

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section discusses the affected environment and the potential impact on these resources of the No-Action Alternative and implementation of the Proposed Action. This analysis is consistent with previous examinations regarding purchase of water for wildlife refuges and in-stream flows in the San Joaquin Valley area. Pertinent documents cited in this section refer to previous reports that have been published regarding water needs and purchases for this area.

This EA provides information on the following resources:

Surface Water (including Water Quality, CVP and SWP Operations),
Groundwater,
Land Use,
Vegetation and Wildlife (including listed species),
Fishery Resources,
Recreation,
Energy Requirements,
Cultural Resources,
Indian Trust Assets, and
Environmental Justice.

3.1 SURFACE WATER

The San Joaquin Valley is separated into two hydrologic basins: the San Joaquin Subbasin to the north that includes Merced County and drains to the Pacific Ocean; and the Tulare Subbasin to the south, which has an outlet only when rare flood flows carry its water across the divide and into the San Joaquin Subbasin. The Merced and San Joaquin Rivers divide Merced County as the two subbasin's drainage basins. Merced ID provides irrigation water to eastern Merced County's agricultural community. Merced ID uses water from the Merced River which is stored behind the New Exchequer Dam in Lake McClure and behind the McSwain Dam in Lake McSwain.

Merced ID's water right on the Merced River is an appropriative right under License #11395 (Application #16186) issued by the SWRCB, which authorizes diversion to storage of up to 605,000 af per annum in Lake McClure and Lake McSwain from the Merced River from the period of October 1 through July 1 (as described in Merced ID's petition to the SWRCB). The points of diversion for this license are located at the New Exchequer Dam and the McSwain Dam. The water is used for irrigation, domestic, recreational, fish culture, and wildlife enhancement purposes within the authorized places of use. Merced ID has greater than 750 miles of canals used to distribute the water to its agricultural customers, of which greater than 100 miles of these canals are concrete lined. For the past

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several years, Merced ID has sought additional revenues by temporarily selling surplus water supplies in excess of their need.

3.1.1 Affected Environment

The water being made available for the Proposed Action is from storage in surplus of Merced ID's current water year needs. The water to be acquired will be accepted from Merced ID at the Crocker-Huffman Dam and conveyed to the San Joaquin wildlife refuges via the pathway discussed in Section 2.3, Proposed Alternative.

3.1.1.1 General. The Merced River originates in the Sierra Nevada, drains an area of approximately 1,273 square miles east of the San Joaquin River, and produces an average unimpaired runoff approximately 1 million acre feet. Agricultural development in the Merced River watershed began in the 1850's, and significant changes have been made to the hydrologic system since that time. The enlarged New Exchequer Dam, forming Lake McClure with a capacity of 1,024,000 af, was completed in 1967 and now regulates releases to the lower Merced River. New Exchequer Dam is owned and operated by the Merced ID for power production, irrigation, and flood control. Releases from Lake McClure pass through a series of power plants and smaller diversions and are regulated at McSwain Reservoir. Below McSwain Dam, water is diverted to Merced ID at the Pacific Gas and Electric Company (PG&E) Merced Falls Dam and further downstream at the Crocker-Huffman Dam (a diversion dam).

The lower San Joaquin River is the section of river from the confluence with the Merced River (below Fremont Ford) to Vernalis, which is generally considered the southern limit of the Delta. The drainage area of the San Joaquin River above Vernalis includes approximately 13,356 square miles, of which approximately 2,100 square miles are drained by Fresno Slough (James Bypass). Little water is contributed from the upper San Joaquin River, except during flood events. Flow patterns in the lower San Joaquin River are therefore primarily governed by the tributary inflows from the Merced, Tuolumne, and Stanislaus Rivers.

The San Joaquin River at Vernalis is affected by the operation of upstream facilities on the San Joaquin, Merced, Tuolumne, and Stanislaus Rivers. Flows in the San Joaquin River at Vernalis are controlled by operations of the New Exchequer, New Don Pedro, and New Melones dams resulting in average monthly flows that are uniform throughout the year, with maximum flows less than historical levels. (Interior, 1999)

The Delta, lies at the confluence of the Sacramento and San Joaquin Rivers, occupying the area of lowest elevation in the Central Valley. Much of the land within the Delta lies below sea level. The reclamation of the land required the construction of levees which created a network of navigable river

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channels, sloughs, and dredger cuts. Currently, the Delta encompasses approximately 1,153 square miles, with over 700 miles of channels and sloughs, and over 1,000 miles of levees. On the average, about 21 million acre-feet of water reaches the Delta.

3.1.1.2 Water Quality. Surface water quality in the San Joaquin River Basin is affected by several factors, including natural runoff, agricultural return flows, biostimulation, construction, logging, grazing, operations of flow regulating facilities, urbanization, and recreation. In addition, irrigated crops grown in the western portion of the San Joaquin Valley have accelerated the leaching of minerals from soils, altering water quality conditions in the San Joaquin River system. (Interior, 1999)

Water quality in the San Joaquin River varies considerably along its length. The upper San Joaquin River from the Mendota Pool to Fremont Ford generally has poor water quality due to the lower water quality of the Delta water introduced at the Delta-Mendota Pool, and the introduction of irrigation return flows from Salt and Mud sloughs. (Interior, 1999) As the San Joaquin River progresses downstream from Fremont Ford, water quality generally improves at the successive confluences of the Merced, Tuolumne, and Stanislaus Rivers.

Delta hydraulic characteristics are influenced by inflows from tributary streams, tidal influence from the Pacific Ocean, and water diversions within the Delta. Accordingly, Delta water quality is highly variable. The concentrations of salts and other constituents in the Delta are affected by river inflows, tidal flows, agricultural diversions, drainage flows, wastewater discharges, water exports, cooling water intakes and discharges, and groundwater accretions. Currently, salinity problems in the southeastern Delta, which occur primarily during years of below normal run-off, are largely associated with the high concentration of salts carried by the San Joaquin River into the Delta. Operation of the state and federal export pumping plants near Tracy draws higher quality Sacramento River water across the Delta and restricts the area of higher salinity water to the southeast portion of the Delta. Elevated salinity levels in the western Delta result primarily from the intrusion of saline waters from the San Francisco Bay system. (Interior, 1999)

3.1.1.3 CVP Facilities and Operations. CVP operations are influenced by general operating rules, regulatory requirements, and facility-specific concerns and requirements. Operating rules take into consideration reservoir operations, downstream conditions, and water rights in the Delta. Reservoir operations are influenced by inflow and release requirements, flood control requirements, carryover storage objectives, lake recreation, power production capabilities, and cold water reserves. CVP operations must also be coordinated with fisheries concerns (spawning, incubation, rearing, and out migration). (Interior, 1999)

The Tracy Pumping Plant and Delta-Mendota Canal convey water to the Mendota Pool on the San Joaquin River west of Fresno and deliver water to wetlands as authorized water supplies in CVPIA; the

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CVP water service contractors and San Joaquin River Exchange contractors in the San Joaquin Valley. Water that is conveyed through the Delta-Mendota Canal can be pumped into the O'Neill Forebay and then into the joint federal-state San Luis Reservoir. The San Luis Canal is the joint state-federal portion of the California aqueduct that extends from the O'Neill Forebay to the southern end of the San Joaquin Valley. The San Luis Canal is used to transport the water to the west side of the San Joaquin Valley for use by CVP and SWP contractors. (Interior, 1999)

3.1.1.4 SWP Facilities and Operations. SWP facilities capture and store water on the Feather River to deliver water to SWP service areas that includes the San Joaquin Valley. Lake Oroville regulates the Feather River for release to the Sacramento River and the Delta. The water is diverted by various facilities of the SWP for delivery to contractors. In the southern portion of the Delta, the Banks Delta Pumping Plant lifts water into the California aqueduct from the Clifton Court Forebay. Water in the aqueduct flows to O'Neill Forebay, from which water can be lifted to the San Luis Reservoir. (Interior, 1999)

3.1.2 Environmental Consequences

Water supplied to the wildlife refuges is used for management of wetland habitat areas within the wildlife refuge boundaries. Unless Level 4 water supplies are acquired, adequate water supplies will not be available to enhance quality habitat for waterfowl. Therefore, the wildlife refuges would not be able to perform adequately the following: manage for waterfowl food supplies, maintain riparian habitat areas, and provide recreational opportunities for visiting public.

3.1.2.1 No-Action Alternative. Under the No-Action Alternative, additional water would not be purchased for use as Level 4 water at the wildlife refuges. Level 2 supplies would be provided by the CVP via regular deliveries. Merced ID would operate New Exchequer Dam as they have historically under similar conditions. Without the transfer, the 25,000 af will remain in storage. Surface water users on the Merced River would continue to divert water for water supply similar to historical patterns. Merced ID would continue to seek buyers of water temporarily surplus to their needs as a method to increase revenues.

3.1.2.2 Proposed Action. Merced ID will increase releases above that which would have been made without the transfer, up to 25,000 af. Merced ID will only release stored water. The volume of the releases will be divided into two parts, 16,000 af will be released mid-October over a six-day period with the approximate flow rate of 1,200 cfs, and 9,000 af will be released in November. Because of operation forecast uncertainties, the transfer could either be terminated early, or it could extend into the month of December. The 12,500 af for fall VAMP flows under the SJRA will be released in October prior to the release of the 16,000 af, thus providing a ramp-up to these flows. The flow rate will be ramped down such that the drop rate does not exceed 50 cfs in order to reduce

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stranding of fish.

Operation studies have been run to demonstrate the increased releases under 90 percent exceedence level inflows. The data is provided in Appendix C. Merced ID's transfer water will not impact water users within the District; therefore, no change in the return flow pattern from water users within Merced ID would occur. Based upon operations analysis using Merced ID and Reclamation/Central Valley Operations preliminary operations forecasts prepared August 14, 2000 (Appendix C) based upon 90 percent exceedence probability inflows, the "With Purchase" forecasts show, during the period of the transfer, an increase of 25,000 af in Merced flow, San Joaquin flow, SWP Delta export, and a corresponding 25,000 af decrease in Merced's storage in Lake McClure. Note that the 25,000 af includes conveyance losses (at least 10 percent) such that the total actual amount of water delivered to the refuge boundaries will be less than 25,000 af.

The 90 percent exceedence forecast is based on a dry-year type for the San Joaquin Valley as defined in the WQCP (SWRCB, 1995). The dry-year scenario analyzed assures that with an extremely dry year in 2001, delivery to Merced ID customers will not be diminished during the 2001 season. Impact to Merced ID customers would occur as a result of this transfer only in the extreme case of consecutive critical water years. Based upon the above results and Reclamation operation studies which forecasts the San Joaquin River at Vernalis flows, no adverse impacts on downstream water users will occur.

The San Joaquin River at Vernalis is used as a baseline for San Joaquin River water quality entering the Delta. The additional flow in the San Joaquin River due to the release of the acquired water on the Merced River would improve water quality conditions, and assist in maintaining the water quality conditions at Vernalis. Thus, the Proposed Action will have a beneficial impact to water quality along the conveyance route of the acquired water to the wildlife refuges.

All the wildlife refuges in the San Joaquin Basin drain to the San Joaquin River through tributaries. The flows from the wetland areas contribute about eight percent of the annual total salt load, and less than five percent of the total annual flow in the San Joaquin River at Vernalis (FWS, 2000). As evaluated in the *Refuge Water Supply – Long-Term Agreements Environmental Assessment for the San Joaquin Basin* (FWS, 2000) and in the *Programmatic EIS* (Interior, 1999), release of most of the water from the wetland areas in winter and early spring months in general did not cause electrical conductivity at Vernalis to exceed standards. Increased flows from wetland areas due to the application of Level 4 water supplies as compared to Level 2 water supplies did not increase the potential for exceeding salinity standards in the San Joaquin River at Vernalis. Analysis also showed that in critical dry years, no additional water would need to be released from New Melones Reservoir to meet the salinity standards at Vernalis due to changes in refuge water supplies from Level 2 to Level 4 if the VAMP flows are provided in the San Joaquin River. Also, there are no return flows from the Kern NWR except in extremely wet years; therefore, providing Level 4 water supplies would not affect

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the quality or quantity of the return flows (CH2MHill, 2000).

Since the Proposed Action includes a refill obligation for water purchased from storage, there would be no impacts to the Delta from the Proposed Action as compared to the No Action alternative.

Purchased water would be released from storage in Lake McClure to the Merced River on a pattern that would supplement in-stream flows. The specific release pattern would depend upon several factors that include hydrologic conditions. The resultant flows from all these factors would be compared to the flow objectives to determine the quantity of water that can be purchased. The Proposed Action would not increase the potential for flooding as compared to the No-Action Alternative because water would not be purchased if forecasted or actual flows were higher than flood flow criteria defined by the Corps of Engineers.

3.2 GROUNDWATER

Potential impacts to groundwater resources were evaluated in the vicinity of the Merced and San Joaquin Rivers.

3.2.1 Affected Environment

Groundwater along the valley floor is in hydraulic continuity between the San Joaquin River and the tributary streams and the underlying aquifer. This continuity generally has been maintained on a historical basis. The lower reaches of the Stanislaus, Tuolumne, and Merced Rivers, from the eastern edge of the valley to their confluence with the San Joaquin River, are all gaining streams, resulting in a net gain of groundwater discharge to the stream bed. Groundwater is supplied by runoff from the foothills and mountains which percolates through the soil to the San Joaquin basin aquifer.

Water is pumped from the groundwater aquifer for local irrigation and municipal uses. Groundwater withdrawals in the past have exceeded recharge resulting in overdraft conditions. The average annual overdraft in the Merced Groundwater Basin (located generally between the cities of Atwater and Livingston, south of State Highway 99 and north of State Highway 140) is estimated at 20,000 af (Merced ID 1997).

Projected agricultural and municipal groundwater usage for the Merced ID service area is approximately 638,000 af per year. Total agricultural groundwater demand in the basin is projected to decrease by 12 percent over the next 40 years, from 601,800 af per year in 1996 to 529,584 af per year in 2036. Total groundwater demand for municipal uses in the basin is projected to increase by approximately 33 percent by the year 2030, from approximately 40,000 af per year in 1996 to 121,000 af per year in 2036 (Merced ID 1997).

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Merced ID relies on groundwater for only a very limited portion of their water supplies, averaging approximately 10,000 af per year. Merced ID has an active program designed to reduce groundwater overdraft that includes conjunctive use, water reclamation and water conservation.

In the lower reaches of the San Joaquin River and in the vicinity of its confluences with major tributaries, high periodic stream flows and local flooding combined with high groundwater levels have resulted in seepage-induced water logging low-lying farmlands. The seepage-induced water logging prevents cultivation of the land until it dries out, thus affecting annual crop production levels. (Interior, 1999)

3.2.2 Environmental Consequences

3.2.2.1 No-Action Alternative. Data presented in Merced ID's Groundwater Management Plan (Merced ID 1997) suggests that the groundwater basin will continue to be over drafted by approximately 20,000 af per year as a result of groundwater extraction rates exceeding recharge rates. The rate of groundwater decline will vary throughout the area depending on conditions including groundwater extraction rates, underflow to groundwater depressions located outside the Merced ID, and recharge from sources including irrigation seepage, precipitation, groundwater inflow and artificial recharge. The rate of decline will also be dependent on the effectiveness of ongoing actions to reduce groundwater overdraft including conjunctive use, water reclamation and water conservation.

3.2.2.2 Proposed Action. The Proposed Action would result in increased stream flows on the Merced and San Joaquin Rivers in the fall months. An increase in stream flows would probably result in a minor increase in groundwater levels in those months near the stream corridors due to seepage to the groundwater aquifer; the areas especially effected are the confluence of the Stanislaus and San Joaquin Rivers, and along the San Joaquin River in the South Delta area.

The water proposed for purchase by the Proposed Action is being made available through storage in surplus of Merced ID's needs for the water year 2000/2001. Therefore irrigation demands or applied water would not be impacted by the Proposed Action. However, an increase in groundwater pumping could occur under sustained dry hydrological conditions. Operation studies have been run to demonstrate the effect of releasing an additional 25,000 af under 50% and 90% exceedence level inflows for water year 2001. (Appendix C provides a summary of the forecasted operations based on 90 percent exceedence level inflows.) Under a 50% exceedence level inflow, storage would refill by January 31, 2001, such that no reduction in water deliveries would be necessary. Under a 90% exceedence inflow, storage would be 25,000 af less. If critically dry conditions continue for an extended period beyond 2001, then Merced ID may pump up to an additional 25,000 af of groundwater.

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As just described, under sustained dry hydrological conditions up to 25,000 af may come from groundwater substitution for reductions in surface water deliveries. Based on a worst case scenario where the total 25,000 af comes from groundwater storage, this would represent less than 5 percent of the total groundwater pumped in the basin in a typical year. These groundwater withdrawals would contribute to a lowering of existing groundwater levels.

Although the Proposed Action has the potential to result in groundwater impacts, these impacts are not considered significant since the need to pump groundwater to make up for loss of storage would occur only under an unlikely scenario of extended critically dry conditions (with an expected occurrence of somewhat less than 10%), and because the amount of the required groundwater pumping (less than 5% of basin groundwater pumped annually) is considered relatively minor.

The Proposed Action is scheduled to occur within the fall months and is not likely to result in seepage-induced water logging because of the dry conditions that exist during the summer months.

3.3 LAND USE

3.3.1 Affected Environment

Land use in the vicinity of Merced ID along the Merced River is primarily agricultural (Reclamation, 1996). Merced ID serves nearly 2,000 Merced County growers. Agricultural products grown with Merced ID water include almonds, corn, alfalfa, and cotton. Lands along the Merced and San Joaquin Rivers include wetlands and riparian corridors.

3.3.2 Environmental Consequences

3.3.2.1 No-Action Alternative. Land-use practices in the Merced ID would not change under the No-Action Alternative.

3.3.2.2 Proposed Action. Land-use practices that would affect surface water application rates or the need for surface water within the Merced ID would not change as a result of the Proposed Action. The surface water availability would not be impacted because the water proposed for purchase is considered water that is from storage and in surplus of Merced ID's current water year needs. Thus, it is not anticipated that the Proposed Action would result in a change in water availability. Furthermore, no reduction in irrigated acreage would occur and the land use would not change. Additionally, this water's availability did not result from any changes in cropping patterns and would not change future/planned agricultural practices.

As discussed above, water would not be purchased if forecasted or actual flows exceeded the in

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stream and Bay-Delta objectives which are less than the flows that may cause high ground water and seepage problems. Furthermore, since the Proposed Action is scheduled to occur within the fall months when dryer conditions exist along the San Joaquin River, it is not likely to result in seepage-induced water logging resulting in a change in land use.

3.4 VEGETATION AND WILDLIFE

This section discusses existing vegetation and wildlife resources along the Merced and San Joaquin Rivers and within the Merced ID, emphasis is given to the biological communities where implementation of the Proposed Action will have the greatest effect.

3.4.1 Affected Environment

Vegetation and wildlife resources within Merced ID's service area is associated with agricultural activities (Reclamation, 1996). Agricultural habitats are generally of lower quality than natural habitats. Rice and irrigated pasture provide the highest quality agricultural habitat for wildlife, followed by grain crops. The habitat value of row crops, orchards and vineyards is less than that of the previously mentioned crops, but all these agricultural habitats provide better habitat value than cotton. The major agricultural habitats are row crops in the Delta Region, and irrigated pasture, orchards, vineyards, and cotton in the San Joaquin River Region. Natural terrestrial and agricultural habitats support special status species. Grasslands support Aleutian Canada goose, American peregrine falcon, Hoover's woolly-star, San Joaquin kit fox, giant kangaroo rat, and blunt-nose leopard lizard. (Interior, 1999)

River and reservoir aquatic habitats are present within the study area. Reservoirs are used primarily by migratory birds present in the Central Valley between October and March. Shallow water habitat (less than 1 foot deep) is used by dabbling ducks (e.g., mallards and cinnamon teal); and deep water habitat (greater than 1 foot deep and less than 15 feet deep) is used by diving ducks (e.g., lesser scaup, ring-necked ducks); and open water habitat (greater than 15 feet deep) is used by gulls and western grebes. (Interior, 1999)

Habitats along the Merced and Lower San Joaquin Rivers include riparian woodlands and freshwater wetland areas. Common wildlife species include fox, coyote, badger, skunk, and opossum which feed on insects, reptiles, rabbits, and rodents. Other mammals present are bats, squirrels, gophers, shrews, mice, rats, beaver, ringtail, raccoon, weasel, bobcat, and deer. Representative birds include waterfowl associated with the Pacific Flyway, upland game birds (dove, pheasant, quail, and chukar) and shorebirds (terns, plovers, sandpipers, egrets, and gulls). Raptors (eagles, falcons, owls, and hawks) feed in the riparian and wetland habitats. Passerines include warblers, blackbirds, sparrows, flycatchers, and swallows. Reptile species can also be found in riparian areas including turtles, lizards, snakes, and amphibians.

3. Affected Environment and Environmental Consequences

The habitats present at the wildlife refuges are summarized in Appendix A and consist primarily of natural valley grasslands, wetlands, and developed marsh. The wildlife refuges are managed primarily for migratory waterfowl, shorebirds, marsh and water birds and their associated habitat types as well as for listed species.

The FWS, pursuant to the provisions of Section 7 of the Endangered Species Act of 1973, provided the following list: *Endangered and Threatened Species that may occur or be affected by project in Selected Quads*. The United States Geological Survey (USGS) quadrangles (quads) included in this list are those that include the affected area of the Proposed Action. This list was modified to include only those species potentially occurring within the riverine and associated riparian habitats of the Merced and San Joaquin Rivers and Delta. The following is a list of federally threatened (T), endangered (E), and candidate (C) species that may occur within the area of influence. No critical habitats are listed.

Listed Species	Scientific Name	Status
<u>Mammals</u> : Listed species, except as depicted below, are upland species not associated with riverine and associated riparian habitats.		
Riparian brush rabbit	<i>Sylvilagus bachmani riparius</i>	E
Riparian (San Joaquin Valley) woodrat	<i>Neotoma fuscipes riparia</i>	E
<u>Birds</u> : None of the listed species are associated with riverine and associated riparian habitats.		
<u>Reptiles</u> :		
Giant garter snake	<i>Thamnophis gigas</i>	T
<u>Amphibians</u> : None of the listed species are associated with riverine and associated riparian habitats.		
<u>Fish</u> :		
Central Valley spring-run chinook salmon	<i>Oncorhynchus tshawytscha</i>	T
Central Valley steelhead	<i>Oncorhynchus mykiss</i>	T
Delta smelt	<i>Hypomesus transpacificus</i>	T

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Sacramento splittail	<i>Pogonichthys macrolepidotus</i>	T
Winter-run Chinook salmon	<i>Oncorhynchus tshawytscha</i>	E
<u>Invertebrates</u> : With the exception provided, no other listed invertebrate species are associated with riverine and associated riparian habitats.		
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	T
<u>Plants</u> : No listed species are associated with riverine and associated riparian habitats. The listed species are associated with upland and vernal pool habitats not affected by the Proposed Action.		
<u>Proposed Species (Candidate Species)</u> :		
Central Valley fall/late-fall run Chinook salmon	<i>Oncorhynchus tshawytscha</i>	C

3.4.2 Environmental Consequences

3.4.2.1 No-Action Alternative. Under the No-Action Alternative, land uses in Merced ID, would remain unchanged; therefore, existing conditions affecting vegetation and wildlife within the District would continue.

3.4.2.2 Proposed Action. Stream flows would increase on the Merced and San Joaquin Rivers in the fall months as a result of the water purchase. However, the releases to the Merced River will follow a regime that keeps the flows within the river channel and is compatible with the riverine features. Additionally, reservoir species will not be impacted due to the relative amount of water to be released (approximately 3 percent) as compared to the capacity of New Exchequer reservoir. Thus, the releases are not likely to affect listed species. The additional water may have a slight beneficial effect on the riparian and wetland habitats by promoting enhancement of the riparian vegetation in non-managed areas along the rivers. Therefore, the Proposed Action may result in a slightly beneficial impact to the riparian vegetation. Additionally, timing of the water releases from storage will assist in meeting wildlife area demands from October through December.

Grassland and vernal pool species will not be impacted by the temporary increase in water levels due to the Proposed Action because they do not solely rely on the fluvial system for survival. The 25,000 af of water will be released to the Merced River channel in a flow regime that is compatible with riverine features. Since none of the water is designated for grasslands or vernal pool habitats, no environmental effects would occur.

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The previous analysis in the Interim Water Acquisition Program Environmental Assessment (Reclamation, October 1995) determined that the increase in water supply would result in beneficial changes in habitats at the wildlife refuges. The additional water would improve year-round management of wildlife. Specifically, the increased water supplies would permit refuge managers to retain more summer water in existing ponded areas, and to irrigate waterfowl food crops. The increased water deliveries would improve water quality and habitat value, which could result in an increased diversity of the species at the wildlife refuges. Because all management actions are intended to benefit vegetation and wildlife on the wetland habitat areas, habitat values are expected to continue to increase under the proposed action. Therefore, the vegetation and wildlife resources that utilize the wetland habitat areas would be beneficially impacted. Upland areas, if present, are expected to remain unchanged. These improved habitat values for migratory waterfowl would not likely to adversely affect any listed or sensitive species that utilize the upland habitat areas of the refuges (e.g., giant and kangaroo rats and San Joaquin kit fox); and would benefit species that use the wetland habitat for cover, foraging, or prey (e.g. mountain plover, bald and golden eagles).

3.5 FISHERY RESOURCES

Fall-run chinook salmon is the anadromous fish species present in the Merced River. Central Valley steelhead habitat potentially exists on the Merced River below Crocker-Huffman Dam; however, there is no conclusive evidence that steelhead are present in the Merced River (DFG, 1996; FedReg, 2000). Fall-run chinook salmon, Central Valley steelhead, striped bass, American shad, and white sturgeon are the anadromous fish species present in the San Joaquin River from the Merced River confluence to Mossdale. Delta species include the Delta smelt and Sacramento splittail. The PEIS (Interior, 1999) provides detailed descriptions of the habitats and life stages of these species. Reservoir fisheries communities commonly include: bluegill, largemouth bass, carp, golden shiner, black crappie, brown bullhead, mosquito fish, and rainbow trout. Native species that are permanently established in Central Valley reservoirs include the prickly sculpin, Sacramento sucker, hitch, and tui chub.

3.5.1 Affected Environment

Within the Merced River, juvenile salmon can be found between mid-January through May, depending on environmental conditions. The Merced River fall run has been partially sustained by production of yearling fall-run chinook salmon at the Merced River Fish Hatchery since 1970. The hatchery contributes less than 5 percent to the San Joaquin River chinook salmon stock. The abundance of fall-run chinook salmon is affected by flows, water temperature and water quality. Higher flows and lower water temperatures (51 - 67 degrees Fahrenheit) in the fall stimulate upstream migration of fall-run chinook salmon. Conversely, low flows and higher water temperatures may inhibit or delay migration to spawning areas. For many years the attraction flows from the Merced River have proved inadequate during October, resulting in straying of adult chinook salmon into agricultural drainage

3. Affected Environment and Environmental Consequences

ditches, primarily Mud and Salt sloughs. Barriers are now installed along the San Joaquin River above and below the confluence of the Merced River to prevent chinook salmon migration into the wrong water streams and to help guide them to the Merced. Losses of chinook salmon occur at the CVP and SWP Delta export facilities occur year round, but generally peak in late winter and spring when fall-run chinook salmon pass through the Delta. (Interior, 1999) The California Aqueduct is not managed for fishery resources. Water would be conveyed between the aqueduct and the wildlife refuges in irrigation canals which also do not include managed fish resources.

For reservoir fisheries communities, water-level fluctuation is the most frequently cited factor adversely affecting fishery production. Habitat quantity and quality are primarily determined by water level fluctuation in reservoirs.

3.5.2 Environmental Consequences

3.5.2.1 No-Action Alternative. Existing fishery conditions in the absence of Level 4 water supplies would prevail under the No-Action Alternative.

3.5.2.2 Proposed Action. Flows in the fall would assist adult salmon migration. Timing of releases from storage will be coordinated to maximize fishery benefits in the Merced and San Joaquin Rivers. These benefits would include improvement to littoral zones, temperatures, and aeration. These releases are consistent with the proposed flows of the SWRCB's WQCP (SWRCB, 1995) and SJRA flow objectives to help meet Bay-Delta flow objectives. The water will be released based on a schedule developed by the FWS, DFG, and Merced ID.

The installation and use of the Head of the Old River Barrier would not be impacted because the proposed flows would be coordinated with the CALFED Operations Group to ensure that there will be no impact to the installation and use of the Barrier.

Certain beneficial biological impacts can be anticipated. The presence of increased flows in established stream channels would provide an increase in habitat quality and promote an overall improvement for fishery resources. Species associated with riparian, aquatic and wetland habitats also would benefit from increases in water and available habitat.

3.6 RECREATION

3.6.1 Affected Environment

There are recreational activities supported by or associated with the Merced ID. Both Lake McClure and Lake McSwain provide recreational opportunities in the form of camping, fishing, boating, water

3. Affected Environment and Environmental Consequences

sports, and wildlife viewing. Recreational opportunities associated with the Merced River include boating, canoeing, rafting, fishing, swimming, camping, and picnicking (Reclamation, 1996). Most of these activities occur primarily during the summer months, typically May through September. Boating and fishing are typically the most popular year-round recreation activities at the reservoirs; fishing year-round also occurs on the Merced and San Joaquin Rivers. (Interior, 1999)

3.6.2 Environmental Consequences

3.6.2.1 No-Action Alternative. No changes to existing recreational opportunities would occur under the No-Action Alternative.

3.6.2.2 Proposed Action. The acquisition of 25,000 af of water during the fall months would result in a less than five percent reduction in the reservoir level at Lake McClure. Consequently, the potential impact to recreation will be minimal. The water would be released during the off-season for recreational activities thus further reducing the impact to recreation at the reservoir.

The Proposed Action may improve recreational values along the Merced and San Joaquin Rivers due to increased habitat value and fishing opportunities.

3.7 ENERGY

3.7.1 Affected Environment

Power generation facilities located on the Merced River, including New Exchequer Power Plant, are owned and operated by Merced ID. Merced ID Electric Services provides electrical power to eastern Merced County generated at the New Exchequer Dam powerhouse. Merced ID also sells power generated at this powerhouse to Pacific Gas and Electric. The hydro power generation plants are operated in a manner to maximize generation in the peak load summer months. (Reclamation, 1996) For Level 4 water deliveries to the wildlife refuges, the most cost-efficient provider is used to meet the power requirements of transporting the water to the refuge border.

3.7.2 Environmental Consequences

3.7.2.1 No-Action Alternative. Energy usage would remain unchanged under the No-Action Alternative

3.7.2.2 Proposed Action. Power generation on the Merced River would not be significantly impacted as a result of the release of purchased water under the Proposed Action. However, it is difficult to predict on a daily or hourly basis specifically the changes that may occur in power releases

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re-operation. Under the Proposed Action, the purchased water would be released in the fall months when peak power loads are lower than in the summer months. Revenues from power generation and power obligations will not be impacted by the purchase of available water from Merced ID. The Merced ID would have additional revenue available from the sale of this water to purchase replacement power, if needed.

3.8 CULTURAL RESOURCES

3.8.1 Affected Environment

Areas that may contain archaeological or historical cultural resources are often located near natural watercourses. The channels of natural water courses change over the years; therefore, archaeological sites are often found in areas that are distant from present-day sources of water. Many archaeological sites in the region have been covered by alluvial deposits and will not necessarily be evident solely by inspection of the ground surface. Disturbance or destruction of cultural resources may result from any type of activity that involves disturbing the earth.(Merced County, 1990)

Types of archaeological sites that could occur along the Merced and San Joaquin Rivers include occupation sites (house pits, ceremonial locations, sweat houses, and storage structures), cemeteries, isolated burials, quarry sites, petroglyph and pictograph sites. Federal historical sites include Shaffer Bridge and Truss Bridge that cross the Merced River at River Road and Oakdale Roads, respectively (Merced County, 1990).

3.8.2 Environmental Consequences

3.8.2.1 No-Action Alternative. Existing conditions related to cultural resources along the Merced and San Joaquin Rivers would remain unchanged with the No-Action Alternative.

3.8.2.2 Proposed Action. The potential for disturbance of cultural resources on lands serviced by Merced ID would not change under the Proposed Action as compared to the No-Action Alternative . No impact would occur because land use would not be changed, existing conveyance facilities will be used, and there would be no new construction within Merced ID. Reduction in reservoir levels will not be significant enough to expose potential sensitive areas to vandalism. Increase flows in the Merced and San Joaquin Rivers could increase erosion potential for cultural resources. However, reservoir and stream levels would fluctuate within their historical ranges. Therefore, cultural resources within reservoirs and along streams would not be affected by the Proposed Action.

3.9 INDIAN TRUST ASSETS

3. Affected Environment and Environmental Consequences

Indian Trust Assets are legal interests in property or rights held in trust by the United States for Indian Tribes or individuals. Trust status originates from rights imparted by treaties, statutes, or executive orders. These rights are reserved for or granted to tribes. A defining characteristic of an Indian Trust Asset is that such assets cannot be sold, leased, or otherwise alienated without Federal approval.

Indian reservations, rancherias, and allotments are common Indian Trust Assets. Allotments can occur both within and outside of reservation boundaries and are parcels of land where title is held in trust for specific individuals. Additionally, Indian Trust Assets include the right to access certain traditional use areas and perform certain traditional activities. (Reclamation, 1995)

3.9.1 Affected Environment

It is Reclamation policy to protect Indian Trust Assets from adverse impacts of its programs and activities whenever possible. Types of actions that could affect Indian Trust Assets include an interference with the exercise of a reserved water right, degradation of water quality where there is a water right, impacts on fish and wildlife where there is a hunting or fishing right, or noise near a land asset where it adversely affects uses of the reserved land. No known Indian Trust Assets occur within the service areas of the Merced ID or along the banks of the Merced and San Joaquin Rivers within the reaches that would be affected by the Proposed Action.

3.9.2 Environmental Consequences

Due to the absence of Indian Trust Assets within the Proposed Actions area of influence, no impacts would occur as a result of the No-Action Alternative or the Proposed Action.

3.10 ENVIRONMENTAL JUSTICE

Executive Order 12898 requires each Federal agency to achieve environmental justice as part of its mission, by identifying and addressing disproportionately high adverse human health or environmental effects, including social and economical effects, of its programs and activities on minority populations and low-income populations of the United States.

No changes in agricultural communities or practices would result from this acquisition. Accordingly the Proposed Action will not have any significant or disproportionate negative impact on low-income or minority individuals within the SWSD.

4. Cumulative Impacts

4.0 CUMULATIVE IMPACTS

According to the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA, cumulative impact is defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The Proposed Action is for the Interior to purchase up to 25,000 af of water from Merced ID to meet Level 4 water supply requirements to enhance wetland habitats. This Proposed Action is being implemented pursuant to the requirements of the CVPIA which requires water acquisition to increase water supplies for wildlife refuges and wildlife management areas in the Central Valley. The overall impacts of implementing the CVPIA are evaluated in the PEIS (Interior, 1999) that was prepared pursuant to NEPA requirements. A Record of Decision for the Proposed Action to implement CVPIA has not been issued as of this writing.

The PEIS includes analysis of Level 4 water acquisitions for wildlife refuges and wildlife management areas in the Central Valley (i.e., acquisition of 150,000 af per year above firm Level 2 water supplies), in addition to other programs mandated by CVPIA. These other programs include, but are not limited to:

- Water contract renewals,
- Water transfers,
- Tiered water pricing,
- CVP operations,
- Fish and wildlife water acquisition,
- Fish and wildlife habitat restoration,
- Land retirement, and
- Facility modifications.

The PEIS addresses the region-wide and cumulative impacts of CVPIA; the following is a summary of the preferred alternative. The PEIS identifies overall beneficial impacts pertaining to fish, wildlife and special-status species and recreation opportunities through CVPIA programs that include habitat acquisition, riparian restoration, and water acquisition for wildlife refuges. Under CVPIA it is anticipated that average annual CVP deliveries will be less and average annual Delta outflows will increase. Water deliveries to water rights contractors and exchange contractors are not expected to change. Also under CVPIA there is expected to be an increase in the depth to groundwater (the groundwater water table will drop) in the Sacramento region (1%), San Joaquin region (3%) and the

4. Cumulative Impacts

north Tulare region (5%) due to changes in surface and groundwater use, crop mix, irrigation techniques, and stream flows. CVPIA was found to result in a reduction of irrigated agricultural acreage and gross revenues for agricultural products due to water management for fish and wildlife, water acquired for stream flows and refuges, water pricing, restoration payments, water conservation, land retirement, and water transfers. CVPIA programs may affect cultural resources, although the impacts can not be quantified at the programmatic level. CVPIA was not found to have disproportionate impacts to minorities and low income populations, or to adversely affect Indian Trust Assets.

The potential for adverse cumulative effects associated with water acquisition primarily pertains to water management within the Central Valley and allocation of existing water supplies. In addition to CVPIA, other Federal and State activities include CALFED and on-going CVP and SWP operations. These are all highly adaptable programs that must meet Endangered Species Act and Delta pumping requirements and are therefore subject to great change as hydrologic and environmental conditions change. Consequently, any analysis of cumulative impacts with regards to affect on water allocations must be necessarily speculative and general.

Since 1992 there have been numerous temporary and short-term acquisitions of water in the San Joaquin Valley to implement the objectives of CVPIA. These acquisitions are provided in Appendix B.

Environmental documents have been prepared to address the site-specific impacts of the executed water acquisitions described in Appendix B. Pursuant to NEPA, each of these environmental documents includes a cumulative analysis addressing the incremental impact of the proposed water acquisition when added to other past, present, and reasonably foreseeable future actions. These environmental documents, consistent with the subject document, have identified overall beneficial impacts associated with the water acquisitions.

The following summarizes cumulative impacts associated with the current Proposed Action:

Surface Water - The Proposed Action would not result in a cumulatively significant adverse impact when added to other past, present, and reasonably foreseeable future actions given the relatively small amount of water involved (maximum of 25,000 af), and the short-term and temporary nature of the water acquisition. Most impacts to water deliveries, water storage, and water quality are associated with specific hydrologic conditions, and these conditions vary year to year. Potential significant impacts are short-term impacts (1-5 years) related to dry hydrologic events. However, over the long term, the probability is low that an extended adverse impact would occur (i.e., a long-term drought). The Proposed Action includes a refill obligation thus further reducing the potential for long-term impacts. No adverse impacts are anticipated to water quality as a result of return flows from the wildlife refuges.

4. Cumulative Impacts

Groundwater - Because the purchased surface water is relatively a small amount (maximum of 25,000 af of water involved), and is short-term and temporary in nature, there is no foreseen, probabilistic, cumulative impact to groundwater in the absence of a long-term drought. Over the long term, conjunctive use programs and natural groundwater recharge during wet years would further minimize the potential long-term impacts on groundwater overdrafting, water level, water quality, and subsidence problems.

Land Use - Short-term impacts are associated with dry hydrologic events that could result in the use of groundwater to offset reductions in irrigation deliveries or reduction in crop production. Over the long term, agricultural production would not be affected. Short-term reductions in employment and income would not significantly affect the regional economy over the long term.

Vegetation and Wildlife - The water purchased under the Proposed Action would have beneficial impacts to the long-term productivity of the riparian ecosystems and the wildlife refuges.

Fishery Resources - The acquired water will provide a beneficial impact to aquatic biota and fishery resources by increasing available water supplies during the fall up stream migration period. Thus, Proposed Action would contribute to a beneficial cumulative impact on fishery resources when added to other past, present, and reasonably foreseeable future actions.

Recreation - The additional water to be provided under the Proposed Action would improve fisheries, waterfowl and wildlife habitats along the Merced and San Joaquin Rivers and the Delta. The improvement of the habitats is expected to result in a slight increase in recreational opportunities. There are no long-term impacts anticipated to the reservoirs as a result of the release of the stored water. Thus, the Proposed Action would contribute to a beneficial cumulative impact on recreation resources when added to other past, present, and reasonably foreseeable future actions.

Energy - Since the release of the purchase water is during the off-peak season for energy demands, over the long term energy productivity would not be significantly affected. Thus, the Proposed Action would not contribute to any cumulatively significant adverse impact on energy use when added to other past, present, and reasonably foreseeable future actions.

Cultural Resources - Exposure of resources to recreational users is unlikely in the short term since the flows would be within normal historical fluctuations. Thus, the Proposed Action would not contribute to any cumulatively significant adverse impact on cultural resources when added to other past, present, and reasonably foreseeable future actions.

Indian Trust Assets - Since there are no Indian Trust Assets within the area that could be affected by the Proposed Action, no cumulatively significant adverse long-term impact to Indian Trust Assets when

4. Cumulative Impacts

added to other past, present, and reasonably foreseeable future actions is anticipated.

Environmental Justice - Since no changes in agricultural communities or practices would occur under the Proposed Action, no cumulatively significant adverse impact on low-income or minority individuals when added to other past, present, and reasonably foreseeable future actions is anticipated.

5. Consultation/Coordination

5.0 CONSULTATION/COORDINATION

5.1 CONSULTATION AND COORDINATION

This EA has been prepared in accordance with the requirements of NEPA as amended, 42 U.S.C. 4321, et a seq.. Reclamation is also complying with other applicable laws including the Clean Water Act of 1977, Clean Air Act of 1970, Endangered Species Act, Fish and Wildlife Coordination Act, NEPA, National Historic Preservation Act of 1966, Executive Order 11988 - Flood Plain Management, Executive Order 11990 - Protection of Wetlands, the Council of Environmental Quality Memorandum - Analysis of Prime or Unique Farmlands, and the Wild and Scenic Rivers Act.

Clean Air Act of 1972, as amended, 42 U.S.C. 7401, et a seq. Section 176c of this act prohibits Federal action or support of activities which do not conform to a State Implementation Plan. The Proposed Action is not expected to violate any standard, increase violations in the project area, exceed the Environmental Protection Agency's (EPA) general conformity de minimis threshold, or hinder the attainment of air quality objectives in the local air basin.

Clean Water Act of 1972, as amended, 33 U.S.C.1251, et a seq. The Proposed Action is in compliance with Section 401 of the Clean Water Act. The Proposed Action will not result in placement of fill material into waters of the United States or their associated wetlands.

Endangered Species Act of 1973, as amended, 16 U.S.C. 1531, et a seq. Endangered Species are not likely to be adversely affected as a result of the Proposed Action. Reclamation has consulted with both FWS and NMFS to ensure that any agency concerns regarding impacts to endangered species have been addressed.

Fish and Wildlife Coordination Act of 1958, as amended, 16 U.S.C. 661, et a seq. The Fish and Wildlife Service is a partner in implementing the Water Acquisition Program. As a partner, the Fish and Wildlife Service has been involved in defining the Purpose and Need for the Proposed Action. Continuing and close coordination with the FWS during implementation of the Water Acquisition Program meets applicable requirements of the Fish and Wildlife Coordination Act.

National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321,et seq. This EA and associated documents are in compliance with this act.

National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470. It has been determined that the Proposed Action will not have an effect on historic properties. If it is discovered that historic properties are affected as the result of the Proposed Action, in compliance with Section 106 of the National Historic Preservation Act, Reclamation will consult with the State Historic Preservation Office

5. Consultation/Coordination

and the Advisory Council on Historic Preservation.

CEQ Memorandum dated August 11, 1980, “Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing the National Environmental Policy Act and the Farmlands Protection Policy Act,” Public Law 97-98, dated December 22, 1981. The Proposed Action will not impact Prime or Unique Agricultural Lands.

Executive Order 11988, Floodplain Management, 1977; and Executive Order 11990, Protection of Wetlands, 1977. The Proposed Action will preserve and enhance the natural and beneficial values of the flood plains and wetlands present along the Merced and San Joaquin Rivers and Delta.

Wild and Scenic Rivers Act of 1968 (PL. 90-542). The Proposed Action will not affect flows in any designated wild and scenic rivers.

Revised Water Right Decision 1641, Order WR2000-02, March 15, 2000, State of California State Water Resources Control Board. Merced ID is petitioning the SWRCB for changes in their water rights to allow the additional point of diversion in the Delta, and the wildlife refuges as additional places of use for the 25,000 af of water to be purchased by Interior.

5.2 LIST OF PREPARERS

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5. Consultation/Coordination

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5.3 Public Involvement and Scoping

A draft version of this EA was circulated to interested parties for a 15-day public review period from September 8 to September 22, 2000 and was made available to the public through the following address on the internet: <http://www.mp.usbr.gov/calfed/index.html>. The distribution list for the final EA is provided in Appendix D.

6. Impact Conclusions and Environmental Commitments

6.0 IMPACT CONCLUSIONS AND ENVIRONMENTAL COMMITMENTS

The Proposed Action is for Interior to purchase up to 25,000 af of water from Merced ID to meet San Joaquin Valley wildlife refuges' Level 4 water supply requirements for the 2000/2001 water year as required by the CVPIA. This section summarizes the impact conclusions developed in Section 3, and describes environmental commitments that Reclamation will follow in the acquisition of Level 4 water for the wildlife refuges.

As described in Section 3, the acquisition of water for delivery of Level 4 incremental water supplies to the San Joaquin Valley wildlife refuges will not have significant adverse impacts to CVP, SWP, and other water supplies. Water will be acquired from Merced ID, a willing provider of the Level 4 water supply. Delta inflow and export will increase as a result of the Proposed Action. Likewise, an increase to Delta pumping will occur from implementation of the Proposed Action. No reduction or change in CVP deliveries to agricultural, and municipal and industrial contractors would occur from implementation of the Proposed Action. Groundwater will not be impacted by the Proposed Action. No changes in land use will occur as a result of the Proposed Action.

The delivery of Level 4 incremental water supplies to the wildlife refuges will have a secondary beneficial impact to fishery resources and riparian areas as a result of an increase in the in-stream flows. The Proposed Action is not likely to adversely affect Federal or State-listed species. The improvement of the habitats is also expected to result in a slight to moderate increase in recreational opportunities.

Power generation on the Merced River would not be significantly impacted. Flows would fluctuate within historical levels thus precluding impact to any cultural resources. The absence of Indian Trust Assets in areas affected by the water transfer also precludes any impact. No adverse human health or environmental effects, including social and economical effects, on minority populations and low-income populations is expected as a result of the Proposed Action.

7. References

7.0 REFERENCES

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